Performance Assessment Task

Level: CTS Introductory **Cluster: TMT** **Outcomes from Course: MEC1020 Vehicle Service and Repair**
Prerequisites: None

Performance Task – Perform a Regularly Scheduled Service on a Vehicle

Context for learning:

Students work, individually or with team members, to perform basic maintenance on a vehicle. With each new year the electronics in vehicles become more complex. This leaves the owner with the impression that all maintenance must be performed by a qualified service garage. An informed vehicle owner/operator is able to address many maintenance/service tasks with basic tools. Whether a student plans to prepare for a work-related role in the industry or simply wants to be an informed owner/operator of a vehicle, this class provides an opportunity to learn about a variety of vehicles.

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ASSESSMENT AND EVALUATION OF STUDENT LEARNING

Performance assessment address the following learner outcomes from the Alberta CTS Program of Studies, TMT Cluster: MEC1020
(Note: Basic competencies are integrated throughout the criteria and rubric descriptors.)

GENERAL OUTCOMES – The student will:	CRITERIA FOR EVALUATION
1. demonstrate safe use of tools, and follow established lab procedures **2. develop a preventive maintenance service schedule for a vehicle** **3. inspect and service a vehicle according to the vehicle service schedule** **5. demonstrate basic competencies** **6. make personal connections to the cluster content and processes to inform possible pathway choices**	Students provide evidence of their learning as they:
Specific Outcomes with numbers	**Criteria**
Skills & Processes **The student will:** **1. demonstrate safe use of tools, and follow established lab procedures** 1.1. demonstrate knowledge of and follow practices that promote safety and protect the environment **2. develop a preventive maintenance service schedule for a vehicle** 2.2. identify and locate a vehicle's major mechanical and structural components that need regular service and care 2.3. identify and safely use common hand tools and equipment 2.4. identify from the owner's manual the recommended: 2.4.1. type and grade of motor oil 2.4.2. type of engine coolant 2.4.3. brake fluid 2.4.4. power steering fluid 2.4.5. transmission fluid 2.4.6. type of filters 2.5. identify potential trouble signs including: 2.5.1. warning lights or gauges 2.5.2. unusual odours or noises	**Develop a preventive maintenance schedule** **Inspect & service a vehicle** **Demonstrate safety & environmental procedures**

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2.5.3. burning oil
2.5.4. leaks
2.5.5. other

3. inspect and service a vehicle according to the vehicle service schedule

3.1. identify the components of a work order
3.2. prepare a repair order
3.3. prepare a service schedule using the owner's manual or a shop manual to determine when to:
3.3.1. change lubrication fluids
3.3.2. replace filters
3.3.3. drain and replace coolants
3.3.4. lubricate body components
3.3.5. inspect and lubricate suspension and steering joints
3.3.6. inspect brake linings
3.3.7. repack wheel bearings
3.3.8. rotate tires
3.3.9. other
3.4. demonstrate a visual inspection of:
3.4.1. fluid levels
3.4.2. hose and belt condition
3.4.3. tire pressure and condition
3.4.4. lights and accessories
3.4.5. battery condition
3.5. demonstrate the procedure used to:
3.5.1. replace engine motor oil, coolant and filters
3.5.2. lubricate chassis and body parts
3.5.3. clean and check the battery condition
3.5.4. rotate tires
3.5.5. check tire pressure
3.5.6. dispose of used fluids and parts
3.5.7. remove and replace tire and rim from a vehicle
3.5.8. boost (jump-start) a vehicle
3.5.9. demonstrate basic troubleshooting on a stalled vehicle

Skills and Processes **The student will:** **5. demonstrate basic competencies** 5.1 fundamental skills 5.1.1 communicate 5.1.2 manage information 5.1.3 use numbers 5.1.4 think & solve problems 5.2 personal management skills 5.2.1 demonstrate positive attitudes & behaviors 5.2.2 be responsible 5.2.3 be adaptable 5.2.4 learn continuously 5.2.5 work safely 5.3 teamwork skills 5.3.1 work with others 5.3.2 participate in projects & tasks	
Knowledge and Understanding **The student will:** **6.make personal connections to the cluster content and processes to inform possible pathway choices** 6.1 complete/update a personal inventory (e.g. interests, values, beliefs, resources, prior learning and experiences 6.2 create a connection between personal inventory and occupational choices	**Share personal connections to pathway**

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Teacher Planning Sheet **FOR BEST RESULTS**	
Instructional Support What instructional support might students need in order to be successful with this task	**Assessment for Learning Opportunities** What tools & feedback will help students improve their work in progress?
Performance Task – Perform a Regularly Scheduled Service on a Vehicle.	
To help students **prepare for the task**: • Performance Assessment Task: Perform a Regularly Scheduled Service on a Vehicle. • Consider sharing & discussing with students the task & rubrics as an assessment for learning activity. • Keep it simple. Students may be looking at a car for the first time. Have students refer to the checklists and worksheets they will follow.	• Summative Assessment: Perform a Regularly Scheduled Service on a Vehicle
To help students **analyze the task:** • Have students observe the work being done on the other cars and trucks in the shop.	• Preventive Maintenance Service Schedule Worksheet • Scheduled Vehicle Maintenance Checklist • Illustrative Examples of Vehicle Maintenance • Formative Assessment: Perform a Regularly Scheduled Service on a Vehicle
To help or provide opportunities for students to communicate: • Promote a class discussion on how cars and the information in service manuals vary. • Use basic competency outcomes for students to demonstrate management skills.	• Students informally exchange ideas
To help students defend strategies or plans: •	• Presentation Opportunity
To help students reflect: • Career outcome relates to Question 11 on self reflection assessment.	• Self Reflection Assessment • Ongoing portfolio development and journals

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Perform a Regularly Scheduled Service on a Vehicle Rubric Summative Assessment of Outcomes 1, 2, 3, 5						
Student Name:				**Date:**		
Level **Criteria**	**Excellent 4**	**Proficient 3**	**Adequate 2**	**Limited 1**	**Insufficient /Blank**	**Mark**
Develop a preventive maintenance schedule (See Preventive Maintenance Service Schedule Worksheet) 2.2, 2.4, 2.5, 3.1-3.3 5.1-5.3	Shows initiative to ☐ complete the worksheet independently. ☐ use resources effectively. ☐ ask specific questions for clarity. ☐ learn by observing others. ☐ complete work ahead of schedule. ☐ give assistance to others in need.	Follows directions to ☐ complete the worksheet independently. ☐ use resources effectively. ☐ ask specific questions for clarity. ☐ learn by observing others. ☐ complete task on time.	Sometimes requires assistance to ☐ complete the worksheet. ☐ use resources effectively. ☐ learn by observing others. ☐ complete task on time.	Frequently relies on others to ☐ complete the worksheet. ☐ use resources. ☐ complete task on time.	Has not yet provided evidence of this performance skill.	
Inspect & service a vehicle (See Scheduled Vehicle Maintenance Checklist) 3.4-3.5 5.1-5.3	Demonstrates a high level of efficiency & expertise to perform services on checklist. Takes extra time and effort to insure vehicle is clean & ready for owner.	Demonstrates efficiency & expertise to perform services on checklist. Checks to make sure vehicle is clean & ready for owner.	Demonstrates expertise to perform some services but, relies on the expertise of others to complete the checklist. Needs a reminder to insure vehicle is clean & ready for owner.	Makes an effort, but finds it challenging to perform services without direct assistance from the teacher. Needs repeated reminders to insure vehicle is clean & ready for owner.	Has not yet provided evidence of this performance skill.	
Demonstrate safety and environmental procedures 1.1, 2.3 5.1-5.3	Takes on responsibility for self & helps others to ☐ set the car onto the hoist with precision. ☐ use tools & equipment safely. ☐ follow environmental procedures in the disposal of liquids.	Takes responsibility to ☐ set the car onto the hoist correctly. ☐ use tools & equipment safely. ☐ follow environmental procedures in the disposal of liquids.	Requires assistance to ☐ set the car onto the hoist correctly. ☐ use tools & equipment safely. ☐ follow environmental procedures in the disposal of liquids.	Needs direct supervision to ☐ set the car onto the hoist correctly. ☐ use tools & equipment safely. ☐ follow environmental procedures in the disposal of liquids.	Has not yet provided evidence of this performance skill.	
Teacher comment/ mark						

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PERFORMANCE ASSESSMENT TASK –
Perform a Regularly Scheduled Service on a Vehicle

Outcomes linked to this task include: Outcomes 1, 2, 3, 5, 6

Planning an Authentic Student Task

Student Role:

The student will work in the context of a shop to perform the regularly scheduled service on a vehicle.

Audience:

The audience for the task will consist of the students, peers and the teacher.

Performance and/or Product:

The performance of the task will have the students perform a regularly scheduled service on a vehicle.

Context:

Students will work in a high school mechanics lab to develop knowledge and skills about how to perform a regularly scheduled service on a vehicle. You will be expected to follow established laboratory procedures.

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Self Reflection Assessment

(Complete questions 1-3 before performance task, questions 4- 11 after you have finished.)

Before I start my work on this task
1. I would like to discover . . . (Teacher shares rubrics with you.)
2. I think I will do well in …
3. I think it will be hard for me . . .
Now that I have completed the task
4. I discovered that …
5. What I did well? (Areas of strength)
6. What was hard for me? (Areas for growth)
7. How have I captured the work? (digital photo, PowerPoint, a real object, record in my portfolio, journaling)
8. Now that I ... I will be able to....
In the future …
9. What I would do differently next time? (What action I will take?)
10. I wonder if I will ever be able to...
11. What connection did you make between your own personal interests and job opportunities discovered in this course? (Career Outcome)

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Performance Assessment Student Task
Perform a Regularly Scheduled Service on a Vehicle

(Outcomes 1, 2, 3, 5, 6)

Develop Preventive Maintenance Schedule - *Refer to* ***Preventive Maintenance Service Schedule Worksheet***

Working with a partner you will develop a preventive maintenance service schedule for a vehicle. You will demonstrate the safe use of tools and follow established lab procedures to:

- ✓ change the lubrication fluids
- ✓ replace filters
- ✓ drain and replace coolants
- ✓ lubricate body components
- ✓ inspect and lubricate suspension and steering joints
- ✓ inspect brake linings
- ✓ repack wheel bearings
- ✓ rotate tires.
- ✓ replace engine motor oil, coolant and filters
- ✓ lubricate chassis and body parts
- ✓ clean and check the battery condition
- ✓ dispose of used fluids and parts.

Inspect and Service Vehicle – *Refer to* ***Scheduled Vehicle Maintenance Checklist***
Using a detailed student instruction guide, materials list, and set of instructions you will perform regularly scheduled maintenance on a vehicle. You will be provided with necessary materials, tools and equipment to carry out the task. The procedure will be divided into three primary categories:

1. Using the vehicle service manual and mileage of the vehicle inspect and determine required services needed.
2. Perform all services on the Scheduled Vehicle Maintenance Checklist
3. Demonstrate safety and environmental procedures throughout the task

Complete Self-Reflection Assessment

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Preventive Maintenance Service Schedule Worksheet
(Outcomes 2.1 – 2.5)

Name: Date:

Vehicle Make: Vehicle Model/Year:

Serial number: Odometer reading (km):

Engine size: # of cylinders: Transmission: ○ Automatic ○ Manual

List all of the fluids that can be checked on this vehicle:

1.	2.
3.	4.
5.	6.
7.	8.
9.	10.

List all of the filters that require changing on this vehicle:

1. _____
2. _____
3. _____
4. _____

How often should the engine oil be checked? _____

How is the engine oil checked? _____

How often should the engine oil and filter be changed? _____ Kms _____Months _____

What type of oil and viscosity rating is recommended for this engine? _____

How many litres of oil are required for this engine? _____

At what mileage is a tune up required? _____

How often should the following items be checked or replaced?

1. Drive belts _____ kms.
2. Air filter _____ kms
3. Fuel filter _____ kms
4. Timing belt _____ kms

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Scheduled Vehicle Maintenance Worksheet continued **page 2**

Cooling system

How often should the cooling systems be checked? _____

What type of coolant is required for this engine? _____

How often should the coolant be changed? _____ kms ____ years _____

Automatic transmission (if applicable)

What is the recommended fluid for this transmission? _____

What is the procedure for checking the transmission? _____

How often should the fluid and filter be changed? _____ kms

Manual transmission or transaxle (if applicable)

What is the recommended fluid for this transmission or transaxle? _____

How is the fluid level checked? _____

How often should the fluid be changed? _____ kms

Rear axle (as in truck or rear wheel drive vehicle)

What is the checking procedure for the differential fluid? _____

What type of fluid is recommended for the differential? _____

When should the fluid be changed? _____

Tires

What is the size of tire on this vehicle? _____

What is the recommended tire pressure for this vehicle? _____ psi

How often should the pressure be checked? _____

How often should the tires be rotated? _____ kms

How much pressure is supposed to be in the spare tire? _____ psi

Brakes

How often should the brakes be checked? _____ kms

Underbody

How often should the underside of the vehicle be washed? _____

Exterior

What can be applied to the paint to protect it from salt, mud, and ultraviolet rays from the sun?

_____

How often should these products be applied? _____

Interior

How should the interior surfaces of the vehicle be cared for?

Carpets _____

Upholstery (fabric seats) _____

Dash pad _____

Interior glass _____

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Illustrative examples of vehicle maintenance

Scheduled Vehicle Maintenance Checklist **(Outcomes** 1.1, 3.4-3.5**)**							
Name:			Date:				
Vehicle Make:			Vehicle Model:				
To determine the left side from the right side, turn on the left signal. That is the left side.							
Oil Change					Litres used		
	✓		✓				
Driving wheels		Front			Rear		
Transmission		Standard			Automatic		
Auto transmission		Level			Color		
Antifreeze		Level			Temperature	Boil/Freeze	
Brake Fluid		Level			Color		
Clutch fluid (yes / no)		Level			Color		
Windshield washer fluid		Level					
Power Steering		Level			Color		
Air Filter							
Tire size (i.e. P155/80R13)		Front			Back		
Tire Condition		L. Front			L. Rear		
		R. Front			R Rear		
Tire Pressure (required)		Front			Rear	Spare	
Tire Pressure (actual)		L. Front			L. Rear	Spare	
		R. Front			R. Rear		
Windshield wipers		Left			Right		
Headlights (low beam)		Left			Right		
Headlights (high beam)		Left			Right		
Running lights (front)		Left			Right		
Running lights (rear)		Left			Right		
Brake lights		Left			Right		
Belt – serpentine		Condition					
y-type		Condition					
Standard Transmission level							
Rear differential level							
Condition of							
Brake Linings							
Battery							
Muffler							
Hangers							

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Perform a Regularly Scheduled Service on a Vehicle Rubric

(Formative Assessment of Outcomes 1, 2, 3, 5)

Student Name _____ Date _____

Level / Criteria	Excellent	Proficient	Adequate	Limited	Insufficient/ Blank
Develop preventive maintenance schedule (See Preventive Maintenance Service Schedule Worksheet) 2.2, 2.4, 2.5, 3.1-3.3 5.1-5.3	I show initiative to ☐ complete the worksheet independently. ☐ use resources effectively. ☐ ask specific questions for clarity. ☐ learn by observing others. ☐ complete work ahead of schedule. ☐ give assistance to others in need.	I follow directions to ☐ complete the worksheet independently. ☐ use resources effectively. ☐ ask specific questions for clarity. ☐ learn by observing others. ☐ complete task on time.	I occasionally need help from others to ☐ complete the worksheet. ☐ use resources effectively. ☐ learn by observing others. ☐ complete task on time.	I frequently rely on others to ☐ complete the worksheet. ☐ use resources. ☐ complete task on time.	Has not yet provided evidence of this performance skill.
Inspect & service a vehicle (See Scheduled Vehicle Maintenance Checklist) 3.4-3.5 5.1-5.3	I demonstrate a high level of efficiency & expertise to perform services on checklist. I take extra time & effort to insure vehicle is clean & ready for owner.	I demonstrate efficiency & expertise to perform services on checklist. I check to make sure vehicle is clean & ready for owner.	I demonstrate expertise to perform some services but, rely on the expertise of others to complete the checklist. I need a reminder to insure vehicle is clean & ready for owner.	I make an effort, but find it challenging to perform services without help from my teacher. I need repeated reminders to insure vehicle is clean & ready for owner.	Has not yet provided evidence of this performance skill.
Demonstrate safety and environmental procedures 1.1, 2.3 5.1-5.3	I take on responsibility for self & help others to ☐ set the car onto the hoist with precision. ☐ use tools & equipment safely. ☐ follow environmental procedures in the disposal of liquids.	I take responsibility to ☐ set the car onto the hoist correctly. ☐ use tools & equipment safely. ☐ follow environmental procedures in the disposal of liquids.	I require assistance to ☐ set the car onto the hoist correctly. ☐ use tools & equipment safely. ☐ follow environmental procedures in the disposal of liquids.	I need direct supervision to ☐ set the car onto the hoist correctly. ☐ use tools & equipment safely. ☐ follow environmental procedures in the disposal of liquids.	Has not yet provided evidence of this performance skill.

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